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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,945	09/16/2003	Edward John Custy	84037	3847

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EXAMINER

NGUYEN, KEVIN M

ART UNIT PAPER NUMBER

2629

DATE MAILED: 08/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/663,945	<b>Applicant(s)</b> CUSTY, EDWARD JOHN	
	<b>Examiner</b> Kevin M. Nguyen	<b>Art Unit</b> 2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

Applicant amended independent claims 1, 7 and 14, canceled claim 15, and added new claims 16-18. Thus, claims 1-14 and 16-18 are pending. The amendment to the specification filed on 5/25/2006 is entered. Response to applicant's amendment and remarks filed on 5/25/2006 have been fully considered but are moot in view of a new ground of rejection represent in this office action.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tecu et al (US 6,703,924) hereinafter Tecu in view of Roberts et al (US 7,009,595) hereinafter Roberts.

3. As to claim 1, Tecu teaches a tactile user interface device (a tactile display reads out information 10, fig. 1), comprising:

a substrate [a panel 12, see Fig. 1];

a plurality of tactile elements [a plurality of tactile elements 16.1 through 16.16, see Fig. 1, col. 2, lines 39-40] disposed on said substrate [the panel 12] wherein each of

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said plurality of tactile elements [plurality of tactile elements 16.1 through 16.16] correspond to at least a fraction of a pixel *[each of plurality of output element 16 correspond to a single pixel on the computer screen, see col. 2, lines 41-48]; and*

wherein each of said plurality of tactile elements [Fig. 1 is identical to Fig. 5, see col. 4, lines 5-6] comprises:

a pressure sensor disposed to indicate if any of said plurality of tactile elements have been depressed *[each of touch sensors 44 provides an output responsive to a user's touch of the associated tactile output element; the touch sensors 44 comprise any kind of pressure responsive transducers, Fig. 5, col. 4, lines 24-26, and col. 4, lines 32-36];*

a feedback device disposed to convey tactile feedback information *[the touch sensors 44/transducers are energized by the user's touch causing the tactile display 42 to provide information, col. 5, lines 5-8; the drive system 30 is similar to those used to control tactile displays providing feedback, col. 3, lines 43-44].*

Accordingly, Tecu teaches all of the claimed limitation, except for a flexible membrane disposed on said plurality of tactile elements.

However, Roberts teaches a related Braille display device which including a flexible sheet 56/101 that puts on a plurality of tactile pins 21 [see figs. 8 and 13, col. 7, lines 42-65 for details of the explanation].

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the flexible sheet 56 as taught by Roberts in the

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Braille display device of Tecu in order to achieve the benefit of providing a new refreshable tactile graphics display technology, high-speed repetitive scan, the depiction of moving pictures, while fabricating the Braille display device at low cost [see Roberts, col. 17, lines 48-58].

4. As to claim 7, Tecu teaches a tactile user interface device (a tactile display reads out information 10, fig. 1), comprising:

a planar substrate [a panel 12, see Fig. 1];

a plurality of pins [a plurality of tactile elements 16.1 through 16.16, see Fig. 1, col. 2, lines 39-40] disposed on said planar substrate [the panel 12] wherein each of said plurality of pins [plurality of tactile elements 16.1 through 16.16] correspond to a pixel, a fraction of a pixel, or a group of pixels on a video display [each of plurality of output element 16 correspond to a single pixel on the computer screen, a number of pixels grouped within a zone, a 200x150 array of tactile output elements 16 consistent with aspect ratio of the screen, see col. 2, lines 41-48]; and

wherein each of said plurality of pins [Fig. 1 is identical to Fig. 5, see col. 4, lines 5-6] comprises:

a pressure sensor disposed to indicate if any of said plurality of tactile elements have been depressed [*each of touch sensors 44 provides an output responsive to a user's touch of the associated tactile output element; the touch sensors 44 comprise any kind of pressure responsive transducers, Fig. 5, col. 4, lines 24-26, and col. 4, lines 32-36*];

a feedback device disposed to convey tactile feedback information [the touch sensors 44/transducers are energized by the user's touch causing the tactile display 42 to provide information, col. 5, lines 5-8; the drive system 30 is similar to those used to control tactile displays providing feedback, col. 3, lines 43-44].

Accordingly, Tecu teaches all of the claimed limitation, except for a flexible membrane disposed on said plurality of pin elements.

However, Roberts teaches a related Braille display device which including a flexible sheet 56/101 that puts on a plurality of tactile pins 21 [see figs. 8 and 13, col. 7, lines 42-65 for details of the explanation].

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the flexible sheet 56 as taught by Roberts in the Braille display device of Tecu in order to achieve the benefit of providing a new refreshable tactile graphics display technology, high-speed repetitive scan, the depiction of moving pictures, while fabricating the Braille display device at low cost [see Roberts, col. 17, lines 48-58].

5. The limitation of claim 14 is similar to those of claim 1, though in method form, therefore the rejection of claim 14 will be treated using the same rationale as claim 1.

6. Claims 1-5, 7-14 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Hayward (US 6,693,516).

7. As to claim 14, Hayward teaches a method of fabricating a tactile user interface device (figs. 5G, 5H and 5I, col. 10, line 20), comprising steps of:

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fabricating a substrate [a layer of a printed circuit board 73, col. 10, line 15-21];  
disposing a plurality of tactile elements on said substrate [pressure sensors 95 sandwiched between the contactor array 90 and the printed circuit board 73, col. 10, lines 16-18] wherein each of said tactile element [the contactor array 90] comprises:  
a pressure sensor disposed to determine if any of said plurality of tactile elements have been depressed [pressure sensors 95, col. 10, line 20-21; a finger 8, fig. 2D, col. 5, line 55 for further details of the alternative embodiment];  
disposing a flexible membrane [76] on said plurality of tactile elements [70, 77]  
disposing a flexible membrane [76] plurality of microelectromechanical devices [70, 77] disposed to convey tactile feedback information, wherein each of said microelectromechanical devices [70, 77] corresponds to one of said tactile elements [a reversible transducer employs bi-directional tactile information is relayed to and from a user and a computer, col. 11, lines 32-66 for further details of the explanation].

8. The limitation of claims 1 and 7 are similar to those of claim 14, though in apparatus form, therefore the rejection of claims 1 and 7 will be treated using the same rationale as claim 14.

9. As to claim 2, Hayward teaches wherein each of said pressure sensors is a mechanical switch (see fig. 2F, col. 6, lines 25-30) comprising contactors 25 and 26 (pins, fig. 2F, col. 6, line 59 through col. 7, line 6), are processed by the small movement in a Z direction. The small movements in the Z directions are also measured and transduced in a signal  $Z(t)$  (col. 7, lines 12-19); whenever the  $Z(t)$  exceeds the

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event signaling threshold, yet another specific tap sequence may be experienced by the user (col. 7, lines 34-44).

10. As to claim 3, Hayward teaches wherein each of said pressure sensor is a mechanical switch [actuators 52 operate in the d31 or d11 mode, see col. 8, lines 28-31].

11. As to claim 4, Hayward teaches wherein each of said pressure sensor is a piezoelectric sensor [the piezo-electric actuators 52, see col. 8, lines 1-15].

12. As to claim 5, Hayward teaches wherein said tactile feedback information includes vibrations [vibrotactile sensations, and heat expansion actuators, see col. 3, line 5, and col. 5, lines 40-45].

13. Claim 8 shares the same limitations as those of claim 2 and therefore the rationale for rejection will be the same.

14. Claim 9 shares the same limitations as those of claim 3 and therefore the rationale for rejection will be the same.

15. Claim 10 shares the same limitations as those of claim 4 and therefore the rationale for rejection will be the same.

16. As to claim 11, Hayward teaches wherein each of said feedback devices is disposed to position said plurality of pins to a plurality of positions [see fig. 2E].

17. Claim 12 shares the same limitations as those of claim 5 and therefore the rationale for rejection will be the same.



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18. As to claim 13, Hayward teaches wherein each of said feedback device is an electromagnet [a variety of devices may be employed as motive sources, including magnetostrictive actuators, col. 3, lines 1-6].

19. As to claim 16, Hayward teaches wherein said substrate contains at least a portion of any control circuitry for said tactile user interface device [a layer of a printed circuit board 73, col. 10, line 15-21].

20. As to claim 17, Hayward teaches wherein said substrate contains any required control circuitry and any associated circuitry required for said tactile user interface device [a layer of a printed circuit board 73, and the circuit 73 controls the said tactile display device, col. 10, line 15-21 for further details of the operation].

21. As to claim 18, Hayward teaches wherein each of said feedback devices [said tactile feedback device] is disposed on said flexible membrane 76 [see paragraph 7 of claim 14 above for more details].

22. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayward in view of Schmidt et al (US 6,354,839) hereinafter Schmidt.

Hayward teaches all of the claimed limitation of claim 1, except wherein each of said feedback device comprises at least one microelectromechanical device has at least two mechanical states.

However, Schmidt teaches the tactile user interface device (a Braille display device 2 is a feedback device, see fig. 1, col. 7, line 43) comprising at least one microelectromechanical device (MEMs 16, fig. 3). The MEMs device 16 has the actuator

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28 operating to open and close the MEMs device 16 (corresponding to two mechanical states as claimed, col. 5, lines 50-58).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the microelectromechanical device operating to open and close as taught by Schmidt in the tactile user interface device of Hayward in order to achieve the benefit of provide a refreshable display that allows a user to access links or subdirectories without removing their hands from the Braille display surface (Schmidt, col. 3, lines 9-12), quickly and easily assembled or repaired (Schmidt, col. 3, line 18), eliminate any interference and prevent damage to underlying display hardware (Schmidt, col. 3, lines 27-30).

### ***Response to Arguments***

23. Applicant's arguments filed 5/25/2006 have been fully considered but they are not persuasive. Applicant argues features in the amended claims 1, 7 and 14 that are newly recited. Thus, new grounds of rejection have been moot. See rejection above. For these reasons, the rejection has been maintained.

***Conclusion***

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN M. NGUYEN whose telephone number is 571-272-7697. The examiner can normally be reached on MON-THU from 8:00-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, a supervisor RICHARD A. HJERPE can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the Patent Application Information Retrieval system, see

<http://portal.uspto.gov/external/portal/pair>. Should you have questions on access to the

Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197

(toll-free).

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Patent Examiner  
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July 25, 2006



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